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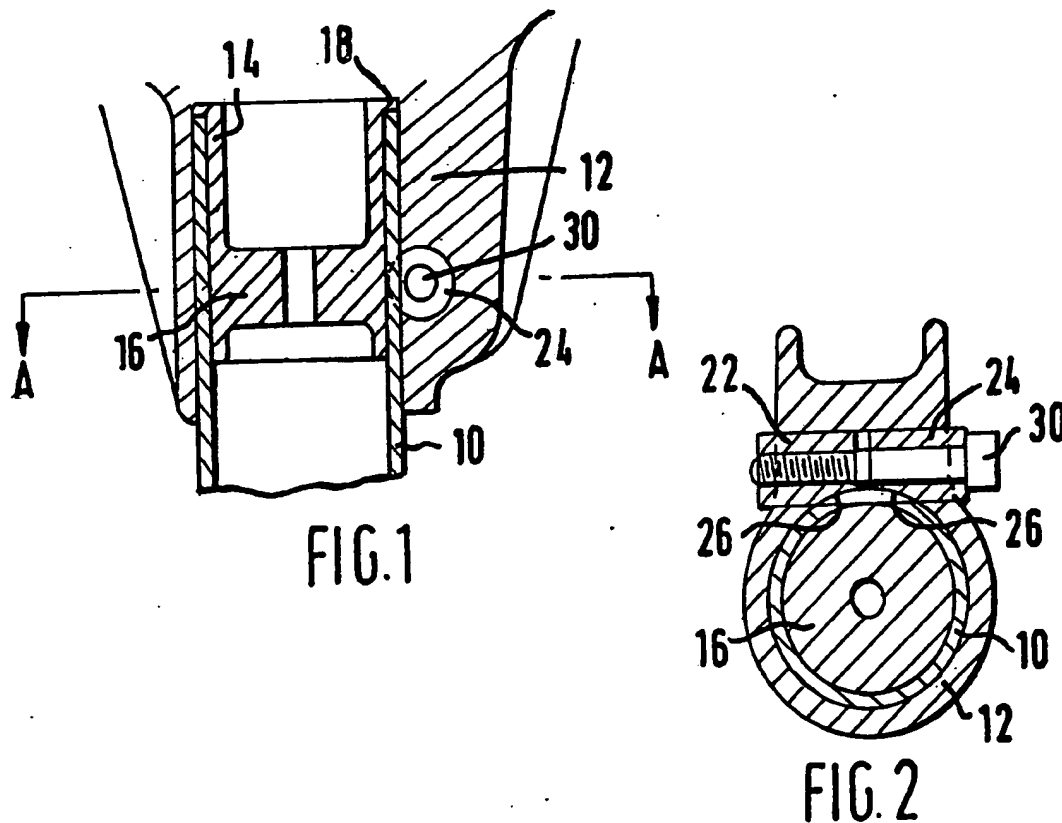
ABSTRACT:

A joint for demountably clamping a tubular member (32) into a socket defined by a main bore (40) without drilling or slitting the tube (32) has collets (44, 45) that fit into an auxiliary bore directed perpendicular to the axis of the main bore (40) and intersecting it over a small arc. The collets (44, 45) have part cylindrical faces (46) that conform to the curvature of tubular member (32) and press on it as a bolt (47) is tightened. Preferably a reinforcing insert is provided that fits into an end of the tubular member (32) and resists compressive load thereon.

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(54) Demountable joint

(57) A joint for demountably clamping a tubular member such as a pylon tube 10 of an artificial limb into a socket forming part of the limb structure into a main bore in a socket 12 comprises an auxiliary bore directed perpendicular to the axis of the main bore and intersecting it over a small arc and first and second collets 22, 24 that fit in the auxiliary bore. Bearing faces 26 on the collets are shaped to conform to the curvature of the tubular member 10. A clamping bolt urges the collets 22, 24 together so that they press on the tubular member 10 and retain it in the socket 12. Preferably a reinforcing insert 14 fits the end of the tubular member 10 and has a disc or annulus 16 that registers with the collets 22, 24 to resist compressive loads on the tube 10.



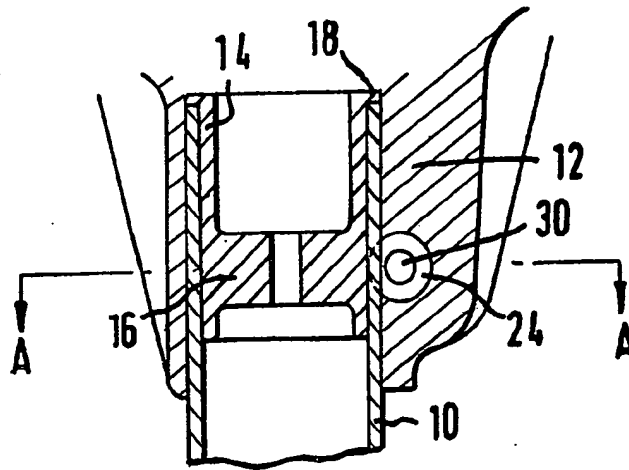


FIG. 1

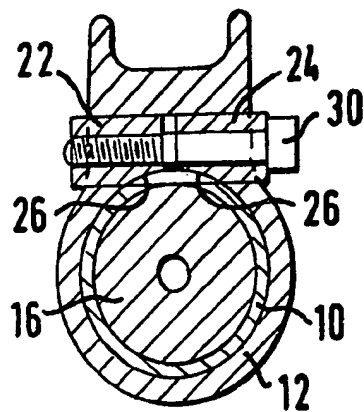


FIG. 2

SPECIFICATION

Demountable joint

5 The present invention relates to a demountable joint by which a tube may be clamped into a socket.

The present invention provides a joint for demountably clamping a tubular member into a main bore in a socket comprising an auxiliary bore directed perpendicular to the axis of the main bore and intersecting it over a small arc, first and second collets which fit in the auxiliary bore and have bearing faces shaped to conform to the curvature of the tubular member, clamping bolt means for urging the first and second collets together so that they press on the tubular member and retain it in the socket.

The joint is particularly intended for clamping a pylon tube to a knee of shin casting in an artificial limb, but is believed to have application outside the artificial limb speciality. It combines manufacturing simplicity with ease of assembly and good fatigue life and has the particular advantage that the tubular member need not be weakened by drilling or slitting.

An embodiment of the invention will now be illustrated in the accompanying drawings in which:

Figure 1 is a view in vertical section of a demountable joint for fixing pylon tubing into a socket; and Figure 2 is a view of the joint in horizontal section on the line A-A of Figure 1.

30 In Figure 1, the upper end of a pylon tube 10 is a push fit in a vertical bore in a socket 12 which is a casting forming part of the limb structure. A reinforcing insert 14 is a push fit in the top of tube 12. It is formed towards its lower end with a horizontally directed reinforcing annulus 16 which is capable of withstanding high compressive loads and at its top with an outwardly directed locating flange 18 which acts as an abutment for the top end of the tube 10. As more clearly seen in Figure 2 the socket 12 is formed with a horizontal bore which intersects the vertical bore in which tube 10 fits over a small arcuate portion thereof. A pair of collets 22, 24 fit into the horizontal bore, one of them 24 having a plain through-hole and the other 22 having a threaded through hole.

45 Each collet has a shaped bearing surface 26 conforming to the curvature of the outer surface of the tube 10 which can only be inserted fully home in the socket 12 when the bearing surfaces 26 are appropriately positioned. It will be noted that in the assembled joint the horizontal bore registers with the reinforcing annulus 16 of insert 14. A clamping bolt 30 is inserted through collet 24 into collet 22 in which it is threadedly located.

To assemble the joint, the insert 14 is placed in the free end of tube 10 which is pushed fully home in the socket 12. The collets 22, 24 are inserted into the horizontal bore and the clamping bolt 30 is inserted and tightened. As it is tightened, the surfaces 26 are clamped into forceful frictional engagement with the external surface of tube 10 and the clamping forces urge the tube 10 against the walls of the bore in socket 12. As a result the tube 10 is held within the socket 12 without the need for the tube 10 to be drilled or slit so that the joint has a very much greater fatigue life than other methods of joining.

Various modifications may be made to the above described embodiment without departing from the invention, the scope of which is defined in the appended claims. For example, the joint has been described in relation to the clamping of pylon tubing which is normally of a soft metal such as aluminium in a socket in an artificial limb. But although it has been designed with the requirements of artificial limbs in mind, it is believed to be of wide application whenever a length of tubing is to be located in a socket or where two or more lengths of tubing are to be joined by a sleeve or socket. It could be adapted, for example, for the joining together of a tubular steel framework of eg. a chair which is intended to be sold in collapsed state and to be assembled by the purchaser and in such applications could be superior to a conventional screwed joint because of its improved wear-resistance.

CLAIMS

- 85 1. A joint for demountably clamping a tubular member into a main bore in a socket comprising an auxiliary bore directed perpendicular to the axis of the main bore and intersecting it over a small arc, first and second collets which fit in the auxiliary bore and have bearing faces shaped to conform to the curvature of the tubular member, clamping bolt means for urging the first and second collets together so that they press on the tubular member and retain it in the socket.
- 95 2. A joint according to claim 1, further comprising a reinforcing insert in the end of the tubular member formed with a disc or annulus which in the assembled joint registers with the collets to resist compressive loads on the tube.
- 100 3. A joint according to claim 1 or 2, wherein the tubular member is a pylon tube of an artificial limb and the socket is a casting forming part of the limb structure.
- 105 4. A joint for demountably clamping a tubular member into a bore in a socket substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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